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AIDS-related stigmatisation in the healthcare setting: a study of primary healthcare centres that provide services for prevention of mother-to-child transmission of HIV in Lagos, Nigeria

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ABSTRACT

Objective To assess AIDS stigmatising attitudes and behaviours by prevention of mother-to-child transmission (PMTCT) service providers in primary healthcare centres in Lagos, Nigeria.

Design Cross-sectional survey.

Setting Thirty-eight primary healthcare centres in Lagos, Nigeria.

Participants One hundred and sixty-one PMTCT service providers.

Outcome measures PMTCT service providers' discriminatory behaviours, opinions and stigmatising attitudes towards persons living with HIV/AIDS (PLWHAs), and nature of the work environment (HIV/AIDS-related policies and infection-control guidelines/supplies).

Results Reported AIDS-related stigmatisation was low: few respondents (4%) reported hearing coworkers talk badly about PLWHAs or observed provision of poor-quality care to PLWHAs (15%). Health workers were not worried about secondary AIDS stigmatisation due to their occupation (86%). Opinions about PLWHAs were generally supportive; providers strongly agreed that women living with HIV should be allowed to have babies if they wished (94%). PMTCT service providers knew that consent was needed prior to HIV testing (86%) and noted that they would get in trouble at work if they discriminated against PLWHAs (83%). A minority reported discriminatory attitudes and behaviours; 39% reported wearing double gloves and 41% used other special infection-control measures when providing services to PLWHAs. Discriminatory behaviours were correlated with negative opinions about PLWHAs ($r=0.21$, $p<0.01$), fear of HIV infection ($r=0.16$, $p<0.05$) and professional resistance ($r=0.32$, $p<0.001$). Those who underwent HIV training had less fear of contagion.

Conclusions This study documented generally low levels of reported AIDS-related stigmatisation by PMTCT service providers in primary healthcare centres in Lagos. Policies that reduce stigmatisation against PLWHA in the healthcare setting should be supported by the provision of basic resources for infection control. This may reassure healthcare workers of their safety, thus reducing their fear of contagion and professional resistance to care for individuals who are perceived to be at high risk of HIV.

Strengths and limitations of this study

- Understanding healthcare workers' attitudes, behaviours and perceived risk of HIV infection can inform policies and practices to reduce stigma-related barriers for persons living with HIV/AIDS (PLWHA) in healthcare settings, thereby improving access to, and quality of, preventive services and treatment.
- Using an internationally validated and locally adapted tool strengthens the findings of this study and provides a more comprehensive approach to describing AIDS-related stigmatisation by health workers in the study setting compared to previous studies conducted in Nigeria and sub-Saharan Africa (SSA).
- Information provided by this study can help to inform efforts to reduce health system barriers against the elimination of paediatric HIV in Lagos, Nigeria, and in similar locales in SSA.
- Self-reported attitudes and behaviours of healthcare workers may be subject to social desirability bias, particularly among those who have previously underwent AIDS stigma reduction training.
- Experiences of AIDS-related stigmatisation and discrimination among PLWHAs may be markedly different from those reported by health workers.

INTRODUCTION

With over 3.2 million people infected, Nigeria's HIV epidemic affects all population groups and geographical areas, making the country the second largest in the global burden of the HIV epidemic.[1] According to the Joint United Nations Program on AIDS (UNAIDS), Nigeria is one of 22 Global Plan priority countries that account for 90% of pregnant women living with HIV globally.[2] Although the country has made some progress in addressing HIV/AIDS, the country still records the largest number of new HIV infections among children each year, accounting for nearly 30% of global paediatric HIV

infections in 2014.[3–5] While many countries in sub-Saharan Africa have made significant strides in reducing the burden of paediatric HIV infection, Nigeria failed to meet the 2015 Global Plan target of eliminating new HIV infections among children by 90% and keeping their mothers alive.[6]

Available evidence shows that serious barriers against uptake of, and retention in, prevention of mother-to-child transmission (PMTCT) care exist in Nigeria.[7 8] Recent studies have demonstrated the effectiveness of a culturally adapted, faith-based programme in increasing HIV counselling, testing and enrolment in care among pregnant women and their male partners in Nigeria.[7 9 10] However, analysis of factors influencing refusal to test for HIV has revealed that fear of AIDS-related stigmatisation was a major reason for not testing.[11] AIDS-related stigmatisation poses barriers at each step of the PMTCT care cascade, and such barriers must be addressed to reduce the burden of paediatric HIV infection in Nigeria. In 2014, Nigeria passed an antidiscrimination act that was intended to reduce AIDS-related stigmatisation. As part of a multisectoral approach to address AIDS-related stigmatisation and discrimination, the National Agency for Control of AIDS also developed the National HIV/AIDS Stigma Reduction Strategy as a guide to stakeholders, especially those that implement programmes and services at the community level.[12] 'AIDS-related stigmatisation' refers to the prejudice, discounting, discrediting and discrimination directed at people perceived to be living with HIV or AIDS.[13] Duckitt describes two concepts associated with AIDS-related stigmatisation: (1) prejudice (the attitude)—an evaluation or judgement towards members of a stigmatised group, which involves emotions of fear, disgust, anger and contempt; and (2) discrimination (the act)—differential treatment of individuals according to their membership in a stigmatised group.[14] Analysis of Nigeria's 2013 Demography and Health Survey showed that nearly 50% of adults (aged 15–49) responded 'no' to the question 'Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?',[15 16] thus indicating a high prevalence of AIDS-related stigmatisation in the society. Although individuals usually learn of their HIV seropositive status at a healthcare facility, healthcare settings are often cited as places where people experience the most direct AIDS-related stigmatisation.[17] AIDS-related stigma experienced in healthcare settings is particularly concerning since it can directly prevent individuals from seeking prevention and care services. Stigmatising acts by healthcare workers may include refusal to treat HIV-positive persons, burning the linen of HIV-infected patients, charging HIV-infected patients for the cost of infection-control supplies and early hospital discharge.[18–23] Other acts include ward segregation, isolation, lack of confidentiality (sharing information on patients' HIV-positive status with hospital workers and other patients) and selective application of 'universal' precautions (eg, use of gloves with only HIV-infected patients).[17–22] A study of AIDS-related stigmatisation by primary healthcare workers conducted in in Ilorin, Nigeria (about 180 miles from Lagos), in 2013, revealed that 98% of the health workers reported observing discrimination against persons living with HIV by other health workers.[24] In a similar study in neighbouring Ghana, health workers who cared for persons living with HIV expressed concerns about secondary stigmatisation by family members and friends who know they interact with such patients.[25 26] Some health professionals take extreme caution when treating HIV-positive individuals, exacerbating a medical environment in which AIDS-related stigmatisation leads to differential treatment of persons living with HIV/AIDS (PLWHAs).[26]

Lagos recently intensified efforts to scale up PMTCT services through multiple strategies, including training and engagement of primary healthcare centre (PHC) personnel. As part of this strategy, PMTCT services were integrated into maternal and child health services at the PHC level in the state. PHCs represent people's first level of contact with the health system and are typically located near the communities they serve. Task shifting of PMTCT services to PHCs has the potential to increase access to HIV counselling, testing, enrolment and retention in PMTCT services.[27] However, in situations where most people know each other, and health workers know, and are known by many in the community, confidentiality may be difficult to maintain, thus leading to increased concern about AIDS-related stigmatisation. The objective of this study was to assess the extent to which AIDS-related stigmatisation existed in PHCs in Lagos state, Nigeria. It was hoped that evidence from the study would add to the body of information available to inform efforts to reduce health system barriers against the elimination of paediatric HIV in the state.

DESIGN AND METHODS

Study area and setting

The study was conducted in Lagos state, southwest Nigeria. With a population of 13 463 million inhabitants,[28] Lagos is the commercial centre of both Nigeria and the West African subregion. The large population and the fluid movement of people in and out of the state have significant implications for the spread of HIV/AIDS. Lagos has 20 local government areas (LGAs), 37 local council development areas and approximately 2000 communities.[29] The HIV prevalence rate among adults is 4.1%, higher than the national average of 3.2%.[30] At the end of 2015, an estimated 217 569 individuals (adults and children) were positive for HIV/AIDS in Lagos state.[6]

Research design, study population and data collection

This was a cross-sectional survey of PMTCT service providers in PHCs in Lagos State, Nigeria. Using a geopolitical map, we purposively selected central and western districts of the state for the study. These districts were chosen because they covered the largest areas of Lagos, including areas with populations with income levels that

are most representative of the state. With approvals from the Lagos State Ministry of Health, the Lagos State AIDS Control Agency and the Lagos State Primary Healthcare Board, Medical Officers of Health in the LGAs within the two study districts were contacted with study information and an invitation to participate. Of the 10 LGAs in the western district, 8 responded and agreed to participate; 2 of the 5 LGAs in the central district responded and volunteered to participate. Consenting medical officers introduced the study team to the nursing officers in charge of PMTCT services in the PHCs within their LGAs. Eligible PMTCT workers at each PHC were then provided with detailed information about the study. Health providers who expressed willingness to participate were asked to sign an informed consent prior to data collection. To ensure confidentiality, each participant was assigned a unique study identification number. Data were collected from 161 consenting health workers in 38 PHCs in 10 LGAs in the central and western districts of Lagos. Only health workers involved in direct patient care (nurses and nursing assistants) or who had access to information on clients' HIV serostatus (laboratory workers, pharmacists, pharmacy technicians and medical records personnel) participated. All PMTCT service providers in the 38 PHCs volunteered to participate in the study except for 20 who were absent (on leave or off-duty) during the time of the survey. Data were collected by JE and VY between April and August 2017 using direct interviews via Research Electronic Data Capture software.[31]

Data collection instrument

Data were collected using the Brief Questionnaire for Measuring AIDS-related stigmatisation by health facility staff, developed and validated by the U.S. Agency for International Development (USAID).[32] An expert consultation by USAID reviewed an item pool of existing AIDS-related stigma measures, identified gaps and prioritised the items. The resulting instrument was field tested among different levels of health facility staff that works across diverse levels of HIV prevalence, language and healthcare settings. Field tests analysed both psychometric properties (α=0.78) and contextual issues.[32] The instrument was piloted locally using a purposive sample of 10 PMTCT workers in two PHCs in Lagos. Participants in the pilot study were not included in the main study. Their feedback was used to modify and adapt the instrument as appropriate. Data on[1] (1) participant demographics, (2) discriminatory behaviours, (3) opinions and stigmatising attitudes towards PLWHAs and (4) work environment were collected. Variables in demographic information and work-related characteristics included age (≤24, 25–39, 40–55 and 56 or above), gender, professional category (doctor, nurse and laboratory technician), professional contact with PLWHA (yes or no), number of staff working directly on provision of PMTCT services (1–3, 4–6, 7–9 and >9), number of HIV-positive patients served per week and HIV-related training status, including training on AIDS-related stigma (yes or no) (table 1).

Table 1 Demographic and work-related characteristics of respondents*

Baseline characteristics	No	%
Age group (years) (n=160)	10	6.25
≤24	78	48.75
25–39	65	40.63
40–55	7	4.38
56 and above		
Gender (n=161)	26	16.15
Male	135	83.85
Female		
Profession (n=159)	24	15.09
Laboratory technician/scientist	22	13.84
Medical records personnel	30	18.87
Community health extension worker	44	27.67
Nurse/midwife	17	10.69
Pharmacist	2	1.26
Database operator	11	6.92
Counselling specialist	9	5.66
Others†		
Personal contact with PLWHA (n=159)	110	69.18
Yes	49	30.82
No		
Number of staff working directly on provision of PMTCT (n=160)		
1–3	50	31.25
4–6	65	40.63
7–9	26	16.25
>9	19	11.88
Number of HIV-positive patients served per week (n=161), median (IQR)	2	3
Training (n=161)	96	59.63
HIV stigma and discrimination	114	70.81
Infection control and universal precautions (including postexposure prophylaxis)	120	74.53
Patients' informed consent, privacy and confidentiality	93	57.76
Key population stigma and discrimination		

*Some respondents left some questions with blanks or no answers; these were not included in the number of responses for the specific question.
†Other profession comprises accountants, cashiers and administrators.
n, number of responses; PLWHA, person living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission.

Healthcare workers' discriminatory behaviours were grouped into the following domains: extra infection precautions, observed stigmatisation and secondary

Table 2 HIV-related discriminatory behaviours among healthcare workers* (n=161)

Variables	Yes n (%)	No n (%)	No opinion n (%)
Extra infection precautions			
Avoid physical contact	18 (11.18)	140 (86.96)	3 (1.86)
Wear double gloves	62 (38.51)	95 (59.01)	4 (2.48)
Use any special infection-control measures with PLWHA that you usually do not use	66 (40.99)	90 (55.9)	5 (3.11)
Observed stigma			
Workers unwilling to care for a patient living with or thought to be living with HIV	21 (13.04)	134 (83.23)	6 (3.73)
Workers providing poorer quality of care to patients with or thought to be living with HIV	14 (8.70)	137 (85.09)	10 (6.21)
Healthcare workers talking badly about people with or thought to be living with HIV	7 (4.35)	150 (93.17)	4 (2.48)
Secondary stigma†			
Worried about people talking badly about you because you care for PLWHAs	21 (13.04)	140 (86.96)	
Worried about friends and family avoiding you because you care for PLWHAs	22 (13.66)	139 (86.34)	
Worried about colleagues avoiding you because of your work caring for PLWHAs	9 (5.59)	152 (94.41)	
Experienced people talking badly about you because you care for PLWHAs	28 (17.39)	133 (82.61)	
Have been avoided by friends and family because you care for PLWHAs	12 (7.45)	149 (92.55)	
Have been avoided by colleagues because of your work caring for PLWHAs	11 (6.88)	149 (93.13)	

*Some respondents left some responses blank; these were not included in the number of responses for the specific question.
† For consistency within the scale, 'strongly agree' and 'agree' were collapsed into a 'yes' category, and 'strongly disagree' and 'disagree' were collapsed into a 'no' category; 'once or twice,' 'several times' and 'most of the time' were also collapsed into a yes category, and 'never' were collapsed into a no category.
n, number of responses; PLWHA, person living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission.

stigmatisation (table 2). For extra infection precautions and observed stigmatisation, the original responses for each statement were 1 (yes), 0 (no) or 777 (I would prefer not to answer or cannot remember). A score of 1 was given for a 'yes' response and 0 for 'no', 'I would prefer not to answer' or 'can't remember'. For secondary stigmatisation, participants responded using a 4-point Likert-type scale that ranged from 0 (*not worried/never*) to 3 (*very worried/most of the time*). Higher scores indicated that the respondent held a stronger discriminatory attitude.

Attitudes towards PLWHA were assessed using five questions on opinions about people living with HIV, four questions concerning fear of contracting HIV infection, four questions on willingness to care for key populations and 15 questions related to health workers' resistance/preference for not treating PLWHA and key populations (table 3). For opinions about PLWHA, the responses were scored 1 for 'yes' and 0 for 'no' or 'don't know'. For the remaining variables, participants responded using a 4-point Likert-type scale ranging from 0 (*strongly disagree/don't know*) to 3 (*strongly agree*). Higher scores indicated that the respondent held a stronger stigmatising attitude. Work environment measured policies related to HIV management/support and infection-control guidelines/supplies (six questions). A score of 1 was given for a yes response if a policy document was observed by the data collector and 0 for no or don't know if none was observed. Higher scores indicated greater health facility policies and procedures (table 4).

Data analysis

All analyses were performed using STATA statistical software V.14. Descriptive statistics were used to describe healthcare workers' demographic characteristics, professional cadre, professional contact with PLWHA, number of HIV-positive patients served per week, HIV-related training experiences, HIV-related discriminatory behaviours and stigmatising attitudes, and presence of institutional policies and procedures. Pearson correlation coefficients were calculated to assess the relationship between professional resistance to treat PLWHA and key populations, negative emotions towards people with HIV, negative opinions about key populations, fear of contagion, observed stigmatisation, secondary stigmatisation, HIV training, institutional policies, work environment, and demographic variables such as age and gender. Furthermore, three multiple regression analyses were conducted to examine associations among levels of discrimination at work, stigmatising attitudes and presence of institutional policies and procedures, controlling for the simultaneous effects of participant age, gender, professional cadre, personal contact with PLWHA and HIV-related training experiences. We tried to answer the following question: how were healthcare

Table 3 Stigmatising attitudes and opinions of healthcare workers (n=161)

Variables	Yes n (%)	No n (%)	No opinion n (%)
Opinions about people living with HIV			
Most people living with HIV do not care if they infect other people.	65 (40.37)	50 (31.06)	46 (28.57)
People living with HIV should feel ashamed of themselves.	12 (7.45)	143 (88.82)	6 (3.73)
Most people living with HIV have had many sexual partners.	42 (26.09)	75 (46.58)	44 (27.33)
People get infected with HIV because they engage in irresponsible behaviours.	31 (19.25)	108 (67.08)	22 (13.66)
Women living with HIV should be allowed to have babies if they wish.	152 (94.41)	8 (4.97)	1 (0.62)
Fear of contracting HIV infection			
Worried about touching the clothing or bedding of a PLWHA	12 (7.45)	144 (89.44)	5 (3.11)
Worried about dressing the wounds of a PLWHA	40 (24.84)	110 (68.32)	11 (6.83)
Worried about drawing blood from a PLWHA	50 (31.06)	101 (62.75)	10 (6.21)
Worried about taking the temperature of a patient living with HIV	5 (3.11)	148 (91.93)	8 (4.97)
Willing to care for key populations			
Prefer not to provide services to people who inject illegal drugs	36 (22.36)	105 (65.22)	20 (12.42)
Prefer not to provide services to men who have sex with men	39 (24.22)	101 (62.73)	21 (13.04)
Prefer not to provide services to female sex workers	30 (18.63)	116 (72.05)	15 (9.32)
Prefer not to provide services to male sex workers	32 (19.88)	114 (70.81)	15 (9.32)
Professional resistance			
HIV/AIDS makes my job as a health worker a risky occupation.	74 (45.96)	83 (51.55)	4 (2.48)
Afraid of catching HIV because of my job in providing care for PLWHAs	52 (32.30)	108 (67.08)	1 (0.62)
Do not want my child to go to a school with a child with HIV/AIDS	14 (8.70)	141 (87.58)	6 (3.73)
Willing to eat in a restaurant where I know the chef has HIV/AIDS	70 (43.48)	81 (50.31)	10 (6.21)
Fear of becoming infected with HIV if working with patients with HIV/AIDS over a long period of time	15 (9.32)	144 (89.44)	2 (1.24)
Rather work with a better class of people than patients with HIV/AIDS	13 (8.07)	139 (86.33)	9 (5.59)
Prefer to refer PLWHAs to my professional colleagues	35 (21.74)	121 (75.15)	5 (3.11)
Prefer not to work with patients with HIV or AIDS	18 (11.18)	139 (86.33)	4 (2.48)
Consider changing my profession specialty/position if it becomes necessary	6 (3.73)	152 (94.41)	3 (1.86)
Best to train a few specialists who would be responsible for the treatment of patients with AIDS	68 (42.24)	92 (57.14)	1 (0.62)
Won't treat those at high risk of HIV/AIDS, such as people who inject drugs and men who have sex with men, as patients	31 (19.25)	119 (73.91)	11 (6.83)
Sometimes find it hard to be sympathetic to patients living with HIV and AIDS	28 (17.39)	125 (77.64)	8 (4.97)
Resentful if patients with HIV/AIDS accounted for a significant part of my caseload	21 (13.13)	116 (72.5)	23 (14.38)
Often have tender, concerned feelings for people living with HIV or AIDS	132 (81.99)	22 (13.66)	7 (4.35)
Reluctant healthcare workers to work alongside a coworker living with HIV	6 (3.73)	120 (74.53)	35 (21.74)

PLWHA, person living with HIV/AIDS.

workers' demographics, work and HIV training, and perceived risk of infection at work associated with their stigmatising attitudes and work environments? Regression coefficient estimations and their significant levels are described. The following key major assumptions were tested and confirmed to be satisfactory prior to the analyses: normality, linearity, absence of multicollinearity and homoscedasticity.

Patient and public involvement

Patients or members of the public were not involved in the design, conduct or dissemination of this study.

RESULTS

Respondent characteristics

As shown in table 1, most respondents (83.8%) were women aged 25–39 years (48.7%) or 40–55 years (40.6%). Professional cadres represented in the survey included 44 nurses/midwives (27.7%), 30 community health extension workers (18.9%) and 24 laboratory personnel (15.1%). Sixty-nine per cent of the respondents reported having direct contact with HIV-positive individuals, averaging two contacts per week. Most respondents (74.5%) indicated having undergone previous training on informed consent and confidentiality, and on infection control and

Table 4 Health facility policies and procedures (n=161)

Variables	Yes	No	No opinion
Policies to HIV management/support			
Policy on HIV testing	124 (77.02)	20 (12.42)	17 (10.56)
Test a patient for HIV without their knowledge	21 (13.04)	139 (86.34)	1 (0.62)
Get in trouble at work if one discriminates against patients living with HIV	132 (82.50)	15 (9.38)	13 (8.13)
Written guidelines to protect patients living with HIV from discrimination	133 (82.61)	18 (11.18)	10 (6.21)
Infection-control guidelines/supplies			
Adequate supplies that reduce risk of becoming infected with HIV	104 (64.60)	48 (29.81)	9 (5.59)
Standardised procedures/protocols that reduce risk of becoming infected with HIV	130 (80.75)	22 (13.66)	9 (5.59)

universal precautions (70.8%). Sixty per cent reported undergoing training on AIDS-related stigmatisation.

Discriminatory behaviours

As shown in table 2, a majority of respondents (80%) had not encountered another healthcare worker who was unwilling to care for a PLWHA, witnessed provision of poor-quality services to PLWHAs or witnessed other healthcare workers talking badly about PLWHA. However, 39% reported wearing double gloves, and 41% used other special infection-control measures when providing services to PLWHAs. Regarding secondary stigmatisation, participants reported low levels of enacted secondary stigmatisation and low levels of anticipated secondary stigmatisation. More than 85% were neither worried about people talking badly about them because of their work with PLWHAs, nor concerned about friends and family or colleagues avoiding them. Most did not experience people talking badly about them (83%) and had not been avoided by friends and family (93%) or colleagues (93%) because they cared for PLWHAs.

Attitudes towards PLWHA

A small proportion (18%–24%) of respondents indicated that they would prefer not to provide services to PLWHAs or key populations (table 3). Similarly, a small proportion of the respondents expressed concern about HIV transmission through drawing blood from (31%) or dressing wounds of (25%) PLWHAs. Less than half (40%) of the respondents believed that most PLWHAs did not care if they infected other people, while very few (26%) believed that most PLWHAs had multiple sexual partners or engaged in irresponsible behaviours (19%). Importantly, 94% agreed that women living with HIV should be allowed to have babies if they wished (table 3).

When asked about occupational safety, 46% believed HIV/AIDS made their jobs risky. A similar proportion thought it was best to train a few specialists who would be responsible for treating PLWHAs, and 32% expressed fear of contracting HIV while on the job. Twenty-two per cent would prefer to refer persons with HIV or AIDS to their professional colleagues, and 19% would rather not have those perceived to be at high risk of HIV/AIDS (eg, persons who inject drugs or men who have sex with men) as patients. Although 50% of the respondents would not eat at a restaurant where the chef had HIV or AIDS, 82% admitted that they often had tender, concerned feelings for PLWHAs (table 3).

Health facility policies and procedures

As shown in table 4, most of the health facilities (>75%) had documented policies that aim to protect PLWHA from AIDS-related stigmatisation, including policies on HIV counselling and testing. Eighty-six per cent of the respondents were aware that they could not test patients for HIV without their knowledge, and 83% indicated that they would get in trouble at work if they were found to discriminate against a PLWHA. Thirty per cent of the respondents noted that they did not have adequate supplies to reduce the risk of becoming infected with HIV.

Correlation coefficients of the identified variables

As shown in table 5, opinions about PLWHAs were significantly associated with willingness to care for PLWHAs ($r=0.28$, $p<0.001$), professional resistance ($r=0.37$, $p<0.001$) and quality of healthcare policies and procedures ($r=0.23$, $p<0.01$). Fear of contracting HIV infection was significantly associated with professional resistance ($r=0.34$, $p<0.001$), which was significantly correlated with preference not to care for PLWHAs ($r=0.28$, $p<0.001$). In terms of sociodemographic variables, age was significantly correlated with opinions of healthcare workers about PLWHA ($r=0.17$, $p<0.05$) and healthcare policies and procedures ($r=0.28$, $p<0.001$). Providers who underwent HIV training had less fear of contracting HIV infection ($r=-0.21$, $p<0.01$) and were less professionally resistant ($r=-0.18$, $p<0.05$).

Multivariate results

Results of multiple regression analyses (table 6) show that health workers' HIV training and perceived on-the-job risk of infection were important predictors of stigmatising

Table 5 Correlation coefficients among selected variables

No	Domains†	1	2	3	4	5	6	7	8	9	10
1	Discriminatory behaviours at work	1.00									
2	Opinions about people living with HIV	0.21***	1.00								
3	Fear of contracting HIV infection	0.16**	0.11	1.00							
4	Willing to care for key populations	0.14	0.28†	0.08	1.00						
5	Professional resistance	0.32†	0.37†	0.34†	0.28†	1.00					
6	Healthcare policies and procedures	−0.09	0.23***	−0.01	0.06	0.04	1.00				
7	Age	−0.08	0.17**	0.06	0.11	0.10	0.28†	1.00			
8	Gender	0.04	0.09	0.04	−0.06	0.01	0.13	−0.01	1.00		
9	Contact with PLWHA	0.11	0.10	−0.04	−0.05	−0.09	0.08	0.24***	0.24***	1.00	
10	Training	−0.06	0.04	−0.21***	0.13	−0.18**	0.24***	0.05	−0.06	0.11	1.00

*P<0.05, **P<0.01, ***P<0.001.
†Domains: different domains were generated from previous tables: discriminatory behaviours at work (table 2)=extra infection precautions +observed stigma+secondary stigma; opinions about people living with HIV (table 3)=most people living with HIV do not care if they infect other people+….+women living with HIV should be allowed to have babies if they wish; healthcare policies and procedures (table 4) = policies for HIV management/support +infection control guidelines/supplies
training (table 1)= HIV stigma and discrimination+infection control and universal precautions (including postexposure prophylaxis)+patients' informed consent, privacy and confidentiality+ stigmatisation against key populations.
PLWHA, person living with HIV/AIDS.

attitudes. Health workers who had undergone HIV-related training tended to report significantly less stigmatising attitudes (β=−0.10), and those who perceived higher risk of infection at work were more likely to display higher levels of stigmatising attitudes (β=0.84).

HIV training was the most important predictor of perceived institutional support (β=0.21). In addition, older respondents were shown to report stronger institutional support of their work with PLWHAs (β=0.57). In the final and complete regression model of discrimination at work, opinions and stigmatising attitudes against PLWHAs were the most important factors in predicting discrimination at work, as the stronger the stigmatising attitudes, the more frequent or intense the discrimination (β=0.13).

DISCUSSION

Although AIDS-related stigmatisation poses significant risk to the physical and psychosocial well-being of PLWHAs, our current understanding of the extent of the problem among healthcare providers working within primary healthcare centres in Nigeria is based on a few studies.[24 33] The current study of primary health centres in Lagos, Nigeria, helps fill this knowledge gap by examining PMTCT service providers' stigmatising attitudes,

Table 6 Estimated results from the multivariate regression analysis

Variable	Stigmatising attitudes n=157	Health facility policies and procedures n=157	Discriminatory behaviours n=156
Age	1.52*	0.57***	−0.60*
Sex	0.25	0.58	0.002
Profession	−0.02	−0.10	0.0001
Personal contact with PLWHA	−1.33	−0.10	1.12*
HIV training	−0.10*	0.21**	−0.07
Fear of HIV infection	0.84**		0.03
Attitudes towards PLWHA and key populations			0.13***
Health facility policies and procedures			−0.16
R^2	0.13	0.17	0.15

*P<0.05, * P<0.01, ***P<0.001.
PLWHA, person living with HIV/AIDS.

perceived risk of infection and discriminatory behaviours towards patients living with HIV.

Contrary to earlier studies of HIV/AIDS stigmatisation in the healthcare setting in Nigeria and elsewhere,[24 33 34] our study revealed low levels of AIDS-related stigmatisation by health workers who provide PMTCT services in Lagos. Overall, we found low levels of secondary stigmatisation and fewer negative attitudes and opinions towards PLWHAs. We also found that most health facilities had policies and procedures that dealt with informed consent, confidentiality and antidiscriminatory practices. Our analysis revealed that HIV training of PMTCT service providers was associated with reduced perception of risk of HIV infection and less stigmatising attitudes and opinions against PLWHAs.

The generally low levels of AIDS-related stigmatisation observed among the study participants could be explained by several factors. First, as antiretroviral therapy (ART) becomes more widely available, stigmatising attitudes may decrease in the population in general and among health workers. Poor access to care has been associated with AIDS-related stigma.[35] Analysis of Demography and Health Survey (DHS) data from 18 countries in SSA found that for every 10-percentage-point increase in the proportion of PLWHAs on ART, -reported HIV stigmatisation decreased to 2.3–2.8 percentage points.[36] Health workers may feel more empowered, less burdened and less resentful towards PLWHA when they have the means to provide treatment to them. Earlier studies have shown that lack of available resources and treatment for patients with HIV in healthcare settings was associated with an increased sense of despair among health workers, resentment towards patients with HIV and feelings of vulnerability to infection.[33 34 37] In January 2017, Nigeria adopted the 90–90–90 plan announced by the UNAIDS to ensure that, by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people with diagnosed HIV infection will undergo sustained ART; and 90% of all people undergoing ART will have viral suppression. Although there is still a huge unmet need for ART in about a third of the states, the number of persons currently on ART has increased from less than 25% in 2014 to 30% in 2017.[38] Second, the Lagos state government and the US implementing partners, including the Centers for Disease Control and Prevention, the USAID and other local and US non-governmental agencies, are actively overseeing PMTCT implementation. In fact, during field data collection, we witnessed several PHCs that were implementing training sessions facilitated by partner agencies. Extensive literature supports the association between HIV/AIDS training and awareness and (1) decreased fear of contagion and (2) reduced AIDS-related stigmatisation.[34 39–41] Third, we found that most of the health workers were aware of the HIV/AIDS policies at their centres. Participants noted that they would be disciplined if they were discovered engaging in behaviours that were contrary to policy provisions. HIV antidiscriminatory policies in healthcare settings have been shown to be positively associated with reduced stigmatisation and discrimination against PLWHA by health workers.[39]

While government oversight and supporting partnerships are encouraging, it should be noted that 30% of the respondents indicated that they did not have adequate supplies to reduce their risk of becoming infected with HIV. The shortage of supplies to support universal safety measures is a common challenge in many healthcare facilities in low-income and middle-income countries,[42 43] potentially leading to avoidance of PLWHAs[44] and contributing to a preference not to provide services to PLWHA and key populations. During data collection visits, we noted that most of the primary healthcare centres were not supplied with electricity, a perennial problem in Nigeria. Each PHC received roughly 10 000 naira (US$30) monthly for gasoline to power standby generators; however, in Nigeria, gasoline is expensive and often in short supply. We observed instances in which health workers contributed out-of-pocket money to purchase gasoline for their standby generators. At night, many facilities also used rechargeable battery-powered emergency lanterns, including in delivery rooms. Such work conditions could have implications for job dissatisfaction, resulting in discrimination against PLWHAs.

Strengths of the study

This study has several notable strengths. First, we used a reliable standardised instrument for assessing AIDS-related stigmatisation within the healthcare setting that incorporates relevant constructs and demonstrates discriminant validity.[17] Second, this study supports the utility of the USAID instrument in assessing AIDS-related stigmatisation in primary healthcare centres and related non-hospital settings in low-income countries. Third, unlike previous studies, our analysis identified factors that mediate AIDS-related stigmatisation in primary healthcare centres, including training and policies. As countries continue to implement task shifting of services to increase access to antiretroviral treatment, further studies should assess the relationship between AIDS-related stigmatisation in primary healthcare centres and uptake of counselling, testing, enrolment into care and retention.

Limitations

This study has some limitations. First, it was conducted in one state in Nigeria. Thus, the findings are likely to be context specific and may not be generalisable to other low-income countries. Second, findings from this study were based on self-reported stigmatising attitudes and discriminatory behaviour and may therefore be subject to social desirability bias.[45] The questions on discriminatory behaviour, however, provided an opportunity for respondents to indicate observance of discrimination against PLWHAs by other workers, a measure that would presumably be less prone to social desirability bias than evaluation of their own behaviour. Still, the reported discrimination was low. Future studies of stigmatisation by healthcare workers would benefit from use of direct

observation and patient-reported measures to explore whether providers' perceptions of their attitudes and actions are in alignment with patients' and third-party observers' accounts. Even in the absence of such information, providers' perceptions can be used to inform the development of provider trainings that are responsive to the proficiencies and deficits that providers have identified for themselves.

Results of this study showed that most of the participants were women and nurses. In healthcare facilities in Nigeria, most healthcare workers are nurses who are usually women. This sample is in accordance with the expected population of healthcare workers in public health facilities in Nigeria. A study conducted by Andrewin and Chien in Belize showed that women and non-religious healthcare workers showed more stigmatising behaviour in attitudes of blame/judgement.[20] However, in the present study, we did not demonstrate that gender influenced stigmatisation by health workers, and we know of no cultural norms that would suggest otherwise. Nevertheless, future studies to investigate the influence of gender on stigmatising attitudes and behaviours among healthcare workers may be important. We also did not have enough cadres of other health workers to facilitate an investigation of whether stigmatising behaviours varied by professional cadre.

CONCLUSIONS

This study provides information that can be cascaded into an overall strategy to reduce AIDS-related stigmatisation in the healthcare setting. There is a need to further elucidate issues related to professional resistance and fear of HIV infection among healthcare workers. Issues related to health workers' values and professional ethics also deserve attention. Since personal attributes predict stigmatising behaviour, the values and beliefs of healthcare workers should be explored and integrated into future AIDS stigma trainings. The finding regarding attitudes towards care provision for key populations also calls for emphasis on professional codes of conduct and ethical provision of care to all deserving clients, irrespective of their status in society or other personal attributes.

Finally, it is important to have documented policies that reduce stigmatisation against PLWHAs in the healthcare setting. However, such policies should be supported with the provision of basic resources for infection control. This may help to reassure healthcare workers of government's commitment to their health and safety and may help to address fear of contagion and professional resistance to care for individuals that are perceived to be at high risk of HIV.

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Contributors All authors made significant contributions to the study and manuscript preparation. JEE conceptualised and designed the study; JEE and VY collected the data; JEE and MRB administered the study; HSA analysed the data; HSA, JEE and JI interpreted the data; HSA, JEE, VY, NA-ZK and BEL drafted the original manuscript; and JEE, HSA, JI, MRB, NA-ZK, BEL and OA reviewed and edited the manuscript.

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REFERENCES

1. Bashorun A, Nguku P, Kawu I, *et al*. A description of HIV prevalence trends in Nigeria from 2001 to 2010: what is the progress, where is the problem? *Pan Afr Med J* 2014;18(Suppl 1):3.
2. Haroz D, von Zinkernagel D, Kiragu K. Development and impact of the global plan. *J Acquir Immune Defic Syndr* 2017;75(Suppl 1):S2–S6.
3. UNAIDS. *Countdown to ZERO: global plan towards the elimination of new HIV infections among children by 2015 and keeping their mother alive*. Geneva, Switzerland: United Nations, 2011.
4. United Nations Children's Fund (UNICEF). *Step Up the Pace: Towards an AIDS-free generation in West and Central Africa*. Dakar-Yoff, Senegal, 2017. https://www.unicef.org/publications/files/Step_Up_the_Pace_West_and_Central_Africa.pdf. (Accessed 5 Feb 2019).
5. Abiodun O. Elimination of mother-to-child transmission of HIV in Nigeria: the roles, preparedness and determinants of successful involvement of traditional birth attendants. *J AIDS Clin Res* 2015;06:481.
6. UNAIDS. *UNAIDS 2016 Estimates: Nigeria*, 2016.
7. Iwelunmor J, Ezeanolue EE, Airhihenbuwa CO, *et al*. Socio-cultural factors influencing the prevention of mother-to-child transmission of HIV in Nigeria: a synthesis of the literature. *BMC Public Health* 2014;14:771.
8. Okoli JC, Lansdown GE. Barriers to successful implementation of prevention-of-mother-to-child-transmission (PMTCT) of HIV programmes in Malawi and Nigeria: a critical literature review study. *Pan Afr Med J* 2014;19:154.
9. Ezeanolue EE, Obiefune MC, Yang W, *et al*. What do you need to get male partners of pregnant women tested for hiv in resource limited settings? The baby shower cluster randomized trial. *AIDS Behav* 2017;21:587–96.
10. Ezeanolue EE, Obiefune MC, Ezeanolue CO, *et al*. Effect of a congregation-based intervention on uptake of HIV testing and

linkage to care in pregnant women in Nigeria (Baby Shower): a cluster randomised trial. *Lancet Glob Health* 2015;3:e692–e700.
11. Ehiri JE, Iwelunmor J, Iheanacho T, *et al*. Using a cultural framework to understand factors influencing hiv testing in Nigeria. *Int Q Community Health Educ* 2016;37:16685258.
12. National Agency for the Control of AIDS. National HIV/AIDS stigma reduction Strategy. National AIDS Control Agency (NACA). Federal Ministry of Health, Abuja, Nigeria. 2016 http://ninerela.org.ng/Home/Download?fileDir=%2FPublications%5CStigma%20Reduction%20Strategy_Stigma%20Reduction%20Strategy%20-%20Final-1%20PDF.pdf (Accessed 5 Feb 2019).
13. Herek GM. AIDS and stigma. *Am Behav Sci* 1999;42:1106–16.
14. Duckitt JH. *The social psychology of prejudice*. New York, NY: Praeger Publishers/Greenwood Publishing Group, 1992:7–24.
15. Dahlui M, Azahar N, Bulgiba A, *et al*. HIV/AIDS related stigma and discrimination against PLWHA in Nigerian population. *PLoS One* 2015;10:e0143749.
16. *Nigeria Demographic and Health Survey (DHS)*, 2013.
17. Nyblade L, Stangl A, Weiss E, *et al*. Combating HIV stigma in health care settings: what works? *J Int AIDS Soc* 2009;12:15.
18. Banteyerga H, Kidanu A, Nyblade L, *et al*; *Exploring HIV and AIDS stigma and related discrimination in Ethiopia: causes, manifestations, consequences, and coping mechanisms*. Addis Ababa: Miz-Hasab Research Center, 2004.
19. Mahendra VS, Gilborn L, Bharat S, *et al*. Understanding and measuring AIDS-related stigma in health care settings: a developing country perspective. *Sahara J* 2007;4:616–25.
20. Andrewin A, Chien LY. Stigmatization of patients with HIV/AIDS among doctors and nurses in Belize. *AIDS Patient Care STDS* 2008;22:897–906.
21. Ahsan Ullah AK. HIV/AIDS-related stigma and discrimination: a study of health care providers in Bangladesh. *J Int Assoc Physicians AIDS Care* 2011;10:97–104.
22. Feyissa GT, Abebe L, Girma E, *et al*. Stigma and discrimination against people living with HIV by healthcare providers, Southwest Ethiopia. *BMC Public Health* 2012;12:522.
23. Essomba EN, Kollo B, Ngambi MK, *et al*. Stigma and discrimination associated with HIV/AIDS in health care settings: a comparative study in two hospitals of different categories in Douala- Cameroon. *J Med Biomed Sci* 2014;3:14–22.
24. Sekoni OO, Owoaje ET. HIV/AIDS stigma among primary health care workers in Ilorin, Nigeria. *Afr J Med Med Sci* 2013;42:47–57.
25. Mwinituo PP, Mill JE. Stigma associated with Ghanaian caregivers of AIDS patients. *West J Nurs Res* 2006;28:369–82.
26. Ulasi CI, Preko PO, Baidoo JA, *et al*. HIV/AIDS-related stigma in Kumasi, Ghana. *Health Place* 2009;15:255–62.
27. Naburi H, Ekström AM, Mujinja P, *et al*. The potential of task-shifting in scaling up services for prevention of mother-to-child transmission of HIV: a time and motion study in Dar es Salaam, Tanzania. *Hum Resour Health* 2017;15:35.
28. US Central Intelligence Agency. The world factbook: Nigeria. 2018 https://www.cia.gov/library/publications/the-world-factbook/fields/2219.html (Accessed 5 Feb 2019).
29. Lagos State Government. About Lagos. 2018 https://lagosstate.gov.ng/about-lagos/ (Accessed 5 Feb 2019).
30. Lagos State AIDs Control Agency. Overview of HIV in Lagos State. 2018 http://lsaca-nigeria.org/public-affairs-unit-3/ (Accessed July 2018).
31. University of Vanderbilt. Research Electronic Data Capture (REDCap). 2017 https://projectredcap.org/software/ (Accessed 5 Feb 2019).
32. Nyblade L, Jain A, Benkirane M, *et al*. A brief, standardized tool for measuring HIV-related stigma among health facility staff: results of field testing in China, Dominica, Egypt, Kenya, Puerto Rico and St. Christopher & Nevis. *J Int AIDS Soc* 2013;16(3 Suppl 2):18718.
33. Aisien AO, Shobowale MO. Health care workers' knowledge on HIV and AIDS: universal precautions and attitude towards PLWHA in Benin-City, Nigeria. *Niger J Clin Pract* 2005;8:74–82.
34. Reis C, Heisler M, Amowitz LL, *et al*. Discriminatory attitudes and practices by health workers toward patients with HIV/AIDS in Nigeria. *PLoS Med* 2005;2:e246.
35. Wolfe WR, Weiser SD, Leiter K, *et al*. The impact of universal access to antiretroviral therapy on HIV stigma in Botswana. *Am J Public Health* 2008;98:1865–71.
36. Chan BT, Tsai AC, Siedner MJ. HIV treatment scale-up and hiv-related stigma in sub-Saharan Africa: a longitudinal cross-country analysis. *Am J Public Health* 2015;105:1581–7.
37. Koto MV, Maharaj P. Difficulties facing healthcare workers in the era of AIDS treatment in Lesotho. *Sahara J* 2016;13:53–9.
38. Oladele EA, Badejo OA, Obanubi C, *et al*. Bridging the HIV treatment gap in Nigeria: examining community antiretroviral treatment models. *J Int AIDS Soc* 2018;21:e25108.
39. Li L, Wu Z, Wu S, *et al*. HIV-related stigma in health care settings: a survey of service providers in China. *AIDS Patient Care STDS* 2007;21:753–62.
40. Wu S, Li L, Wu Z, *et al*. A brief HIV stigma reduction intervention for service providers in China. *AIDS Patient Care STDS* 2008;22:513–20.
41. Pulerwitz J, Oanh KT, Akinwolemiwa D, *et al*. Improving hospital-based quality of care by reducing HIV-related stigma: evaluation results from Vietnam. *AIDS Behav* 2015;19:246–56.
42. Puchalski Ritchie LM, Khan S, Moore JE, *et al*. Low- and middle-income countries face many common barriers to implementation of maternal health evidence products. *J Clin Epidemiol* 2016;76:229–37.
43. Roncarolo F, Boivin A, Denis JL, *et al*. What do we know about the needs and challenges of health systems? A scoping review of the international literature. *BMC Health Serv Res* 2017;17:636.
44. Li L, Lin C, Guan J, *et al*. Implementing a stigma reduction intervention in healthcare settings. *J Int AIDS Soc* 2013;16(3 Suppl 2):18710.
45. Phillips DL, Clancy KJ. Some effects of "social desirability" in survey studies. *American Journal of Sociology* 1972;77:921–40.